Abstract

(1) Fifteen new series of thermotropic copolymers based on terephtalic acid, hydroquinone/ chlorohydroquinone/methyl hydroquinone and flexible aliphatic dicarboxylic acids were synthesised by sequential addition solution polycondensation technique. (2) In each series seven copolyesters were synthesised by varying the mole ratio of terephthalic acid relative to the aliphatic dicarboxylic acids. (3) The effect of the substitution in the aromatic nucleus and differing lengths of the methylene units in the aliphatic dicarboxylic acid on the liquid crystalline phase transition temperature were investigated with differential scanning calorimetry. (4) The substitution on the aromatic nucleus and increase in the number of methylene units depress the liquid crystalline transition temperature. (5) Thermotropic character is retained over a large dilution of the mesogenic moiety in these partially randomised rigid-rod flexible spacer type systems. (6) The temperature range over which the mesophase is stable, is very large, especially for compositions with a large crystalline flexible spacer length. (7) Most polymers degrade prior to isotropization making quantitative estimates of the thermodynamics parameters without any ambiguity rather difficult. (8) The possibility of synthesising thermotropic systems without resorting to difficult synthesis route involving prior synthesis of mesogens has been demonstrated.